

## OCCURRENCE OF *LEPTOXYPHIUM BAHIENSE* BAT AND CLF. ON THE MIDRIB OF COTTON LEAVES

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DURING March–June, leaves of field-grown *Gossypium barbadense*, *G. arboreum* and *G. hirsutum* showed downward curling and black patches on their midribs on the lower surface (figure 1). Dry weather with sky overcast favoured the spread of the disease. Light microscopic examination of black patches revealed the presence of a synnematosus hyphomycete. Aphids were also seen feeding in and around the affected area. The distance from the origin of the midrib to the affected focus was strikingly the same in almost all the leaves of cotton species regardless of their age. There was no evidence of the fungus when the midrib was in tact. Close examination showed that aphids were the first agents to attack that particular site of midrib to suck assimilates leaving behind excreta. This dropping is known to contain sugars,

amino acids and organic acids<sup>1</sup>. While black ants were attracted to these products in field conditions, red ants dominate in glasshouse conditions, aggravating the injury initiated by aphids. The sooty mould appears as a small black speck and slowly ramifies into a black patch around the affected midrib site (figure 1). Host hypodermal cells proliferate in response to injury and some of them appear on the epidermis too (figure 3). Cells below the base of glands appeared to contain dense cytoplasm and some of them filled with dark red substances. This is again a host response to wound caused by aphids.

The fungus was isolated from the injured midrib on acidified PDA. Young colonies were olivaceous turning into black central region with synnemata at maturity. After ascertaining purity of culture, the mould was transferred to PDA for conidium production. Hyaline conidia were collected by flooding sterile water on the agar surface after 8–10 days of incubation. Conidial suspension was placed on detached leaves where midribs were already injured by aphids and another set was kept without injury. Black patches were seen after 7 days only on injured midribs implying the nature of wound pathogen.

Light microscopic examination showed synnemata with a stout base and an open terminal conidiogenous zone. Synnemata on the host and in pure culture proliferate through the head to produce another conidiogenous apex at a higher level (figure 2). Branched fructifications also arise from a single apex. Synnemata arise from ropes of repent hyphae. Conidia are hyaline. Hyphal cells are short, cylindrical forming an irregular network. Based on these characters the fungus was identified as *Leptoxyphium bahiense* Bat and Cif.

In India, colonies of *L. bahiense* were reported to be associated with scattered glands on the under surface of *Tectona grandis* and *Kigelia pinnata*<sup>2</sup> leaves being restricted to glandular trichomes. Although glandular trichomes are distributed evenly on the entire surface of cotton leaves, only area injured by aphids was colonized by the sooty mould on the midrib. Colonies of *Leptoxyphium* are known to occur as common outgrowths on the neuro-axillary aggregation of glands on the under surface of leaves of *Catalpa* in North America<sup>2</sup>. The present report makes an addition to the host index of *L. bahiense*.

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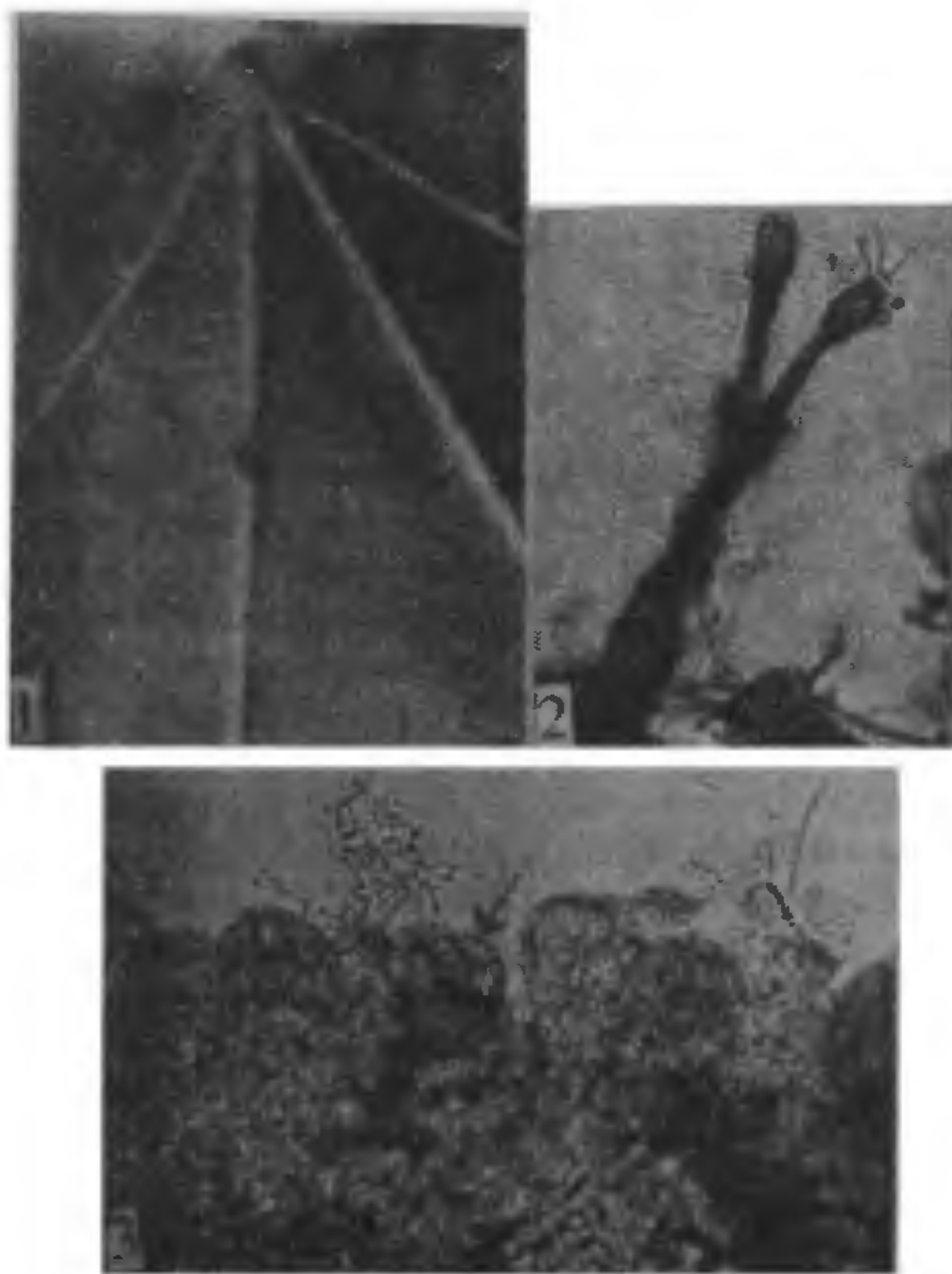


Figure 1-3. 1. Leaf showing black patch. 2. *Leptoxyphium*—proliferation of synnemata. 3. Section of injured midrib host response-callus formations.

1. Way, M. J. *Ann. Rev. Entomol.*, 1963, 8, 307.
2. Hughes, S. J. *Mycologia*, 1976, 68, 693.